

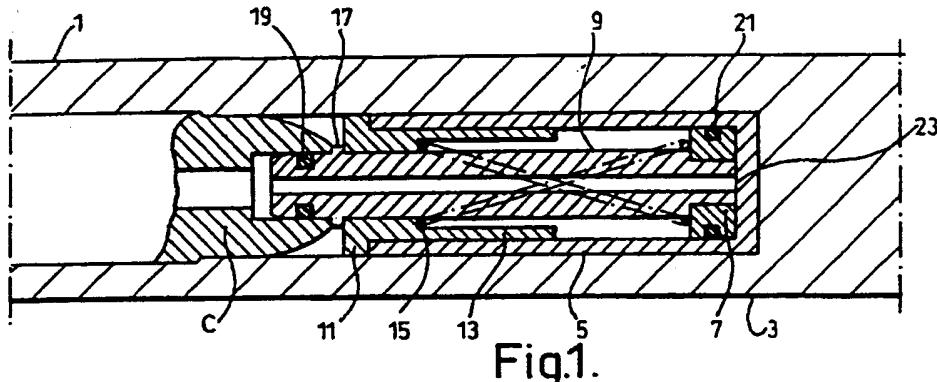
# UK Patent Application GB 2 319 076 A

(43) Date of A Publication 13.05.1998

(21) Application No 9623165.9	(51) INT CL <sup>6</sup> F41A 33/04
(22) Date of Filing 06.11.1996	(52) UK CL (Edition P ) F3C CTE
(71) Applicant(s) Constantia (International) Limited (Incorporated in Gibraltar) 143 Mainstreet, Gibraltar	(56) Documents Cited GB 2060144 A GB 1268300 A
(72) Inventor(s) Michael Ernest Saxby	(58) Field of Search UK CL (Edition P ) F3C CFG CSD CTD CTE CTN INT CL <sup>6</sup> F41A ONLINE: WPI
(74) Agent and/or Address for Service Brookes & Martin High Holborn House, 52-54 High Holborn, LONDON, WC1V 6SE, United Kingdom	

## (54) Improvements in firearms.

(57) A device for insertion into the barrel of a self-loading training gun comprises a piston and cylinder unit 5, 7, 9. The cylinder 5 is adapted to be made fast in the barrel 3. The piston assembly 7, 9 is adapted to move axially relative to the barrel. The spindle 9 of the piston and cylinder unit has an inlet to receive gas discharged by a cartridge C and means 19 for sealing the inlet relative to the cartridge. Gas entering the inlet causes the spindle to extend from cylinder so as to press against the cartridge, so as to drive the slide rearwardly and recycle the gun. The gun may utilize a laser beam. The cartridge may be a gas cartridge or a blank cartridge for simulating the report of the gun.



GB 2 319 076 A

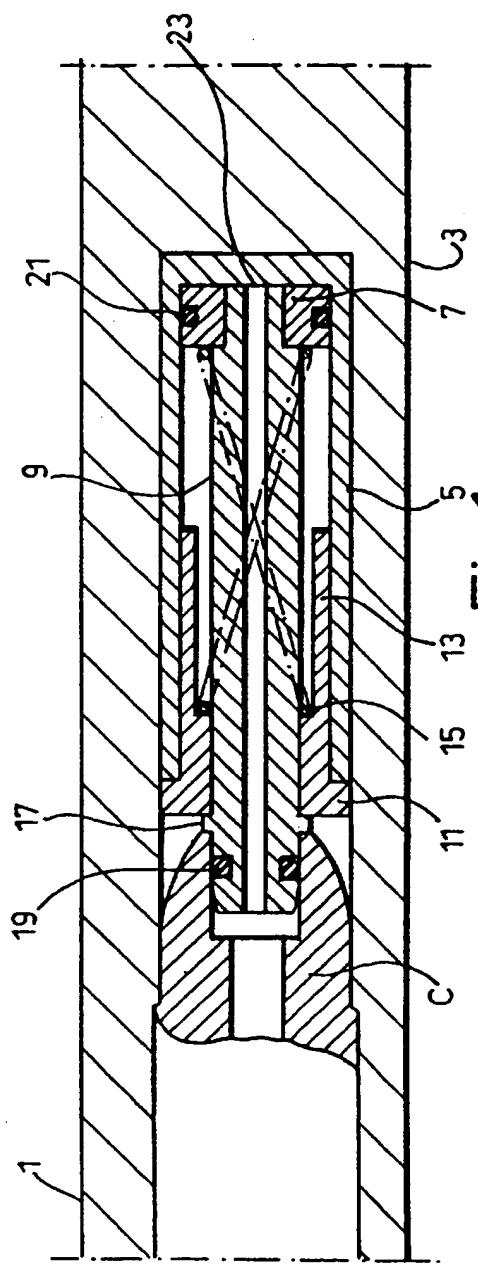


Fig.1.

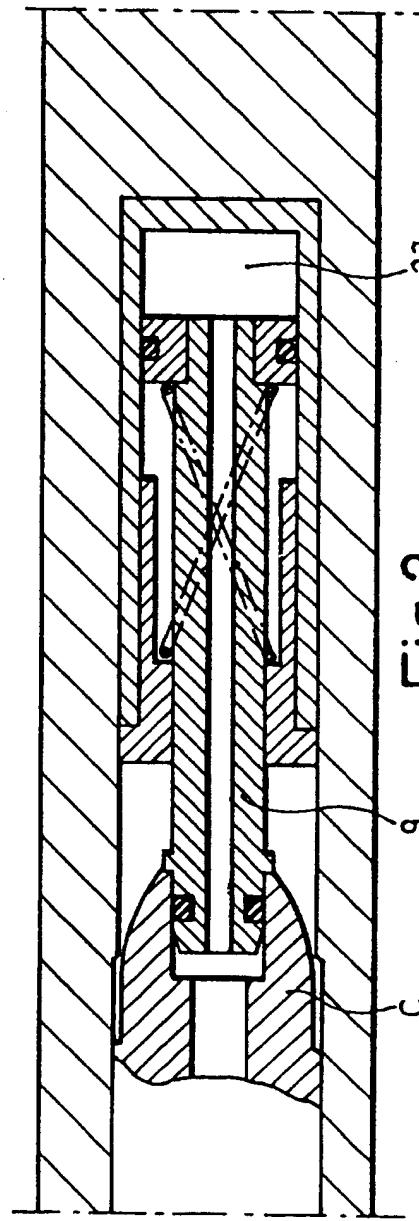


Fig.2.

**2319076**

-1-

IMPROVEMENTS IN FIREARMS

It is known to modify a firearm for training purposes by closing-off the barrel and fitting it with a unit to

5 direct a beam of laser radiation at the target upon firing. Blank ammunition is also commonly used for training purposes and may be used in modified firearms of this type. Such blank ammunition may take the form of gas cartridges in which the discharge of compressed

10 gas is used to produce a report. However, the type of gas cartridge normally used for training with revolvers and other non-self loading guns does not produce sufficient recoil to allow of its use with self-loading weapons. Although gas cartridges have been developed to

15 produce sufficient recoil to recycle automatic firearms, these are not especially suitable for use with self-loading laser video firearms with a closed barrel.

Low energy pyrotechnic cartridges are also known for

20 training purposes and may lead to the same difficulties when used with self-loading laser video firearms.

To overcome this problem it is proposed to provide the

25 barrel of a self-loading firearm with a device into which gas discharged from a cartridge is used to apply pressure to the cartridge and thereby to the gun slide, so as to initiate recycling.

In the drawings:

Figure 1 is an axial section through a part of a self-loading gun fitted with the device proposed in  
5 accordance with the invention, a cartridge being shown in the breach, before firing.

Figure 2 is a view similar to Figure 1 immediately after firing.

10

Referring to Figure 1, a self-loading gun modified for training purposes includes a breach 1 into which a gas cartridge C may be fed automatically by known mechanism, not shown. The barrel 3 of the gun is closed and  
15 provided at its forward end with a device, also not shown, for directing a beam of laser radiation at a target. Fitted into the barrel immediately forwards of the breach is a device for receiving gas under pressure from the cartridge C and applying force to the cartridge  
20 to drive it and the gun slide rearwardly, thereby to recycle the weapon and reload it. The device includes a cylinder 5 which is fitted into the barrel. A piston assembly includes a piston 7 which is reciprocal in the cylinder, and a hollow spindle 9 which extends from the  
25 piston and passes through a bore in a headpiece 11 surmounting the cylinder. The piston wall has a peripheral groove in which an elastomeric seal ring 21

is retained. The headpiece has a portion 13 which extends into the cylinder and limits travel of the piston. A compression spring 15 retained by the headpiece biases the piston into the retracted position  
5 shown in Figure 1. The spindle has a land 17 near its free end to engage the nose of the cartridge. A portion of the spindle projecting beyond the land is dimensioned to enter the cartridge mouth and be sealed to it by an elastomeric seal ring 19.

10

When the cartridge is fired, compressed gas is discharged from its mouth, flows through the bore within the spindle 9 and enters the chamber 23 behind the piston so as to drive the piston assembly to the rear as  
15 shown in Figure 2, carrying with it the cartridge and slide and causing recycling of the gun.

20 The device described above may also be used with low energy blank pyrotechnic cartridges which are incapable of causing a gun to recycle.

It will be appreciated that modifications may be made to the device described above. Thus, for example, the seal ring 19 may be dispensed with if use is made of purpose  
25 designed cartridges having their own sealing arrangement. The cylinder may be provided with a recess behind the piston or with a step to prevent its

bottoming within the cylinder. Also, the arrangement may be reversed by arranging for the cylinder to slide within the barrel and providing it with an inlet nozzle for reception within the mouth of the cartridge. In  
5 this arrangement the piston is made fast with the barrel. Other arrangements, for example in the nature of bellows, may be used to perform the invention.

CLAIMS

1. A method of recycling a self-loading training gun, in which gas discharged from a cartridge is used to cause the expansion of a device disposed forwardly of the cartridge, thereby to apply force to the cartridge and the slide of the gun.
2. A self-loading training gun, the barrel of which is provided with an expandible device, the device having an inlet to receive gas from a blank cartridge fired by the gun, the device being adapted to expand axially within the barrel under the pressure of gas fed to it, and to apply a rearward acting force to the cartridge.
3. A device for insertion into the barrel of a gun comprising a piston and cylinder unit, a first component of which is adapted to be made fast in the barrel and a second component of which is adapted to move axially relative to the barrel, the second component having an inlet to receive gas discharged by a cartridge, means being provided for sealing the inlet relative to the cartridge, whereby gas entering the inlet causes the second component to move relative to the first component in the sense of pressing against the cartridge.



The  
Patent  
Office

6

Application No: GB 9623165.9  
Claims searched: 1 to 3

Examiner: Trevor Berry  
Date of search: 21 January 1998

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.P): F3C (CFG, CSD, CTD, CTE, CTN)

Int CI (Ed.6): F41A

Other: ONLINE: WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2060144 A LEADER PROPULSION SYSTEMS	1
X	GB 1268300 COLT	1

- |   |   |
|---|---|
| <p>X Document indicating lack of novelty or inventive step</p> <p>Y Document indicating lack of inventive step if combined with one or more other documents of same category.</p> <p>&amp; Member of the same patent family</p> | <p>A Document indicating technological background and/or state of the art.</p> <p>P Document published on or after the declared priority date but before the filing date of this invention.</p> <p>E Patent document published on or after, but with priority date earlier than, the filing date of this application.</p> |
|---|---|